



United States
Department of
Agriculture



Soil
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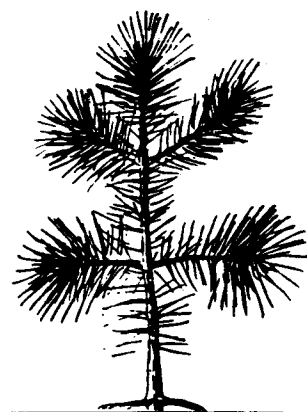
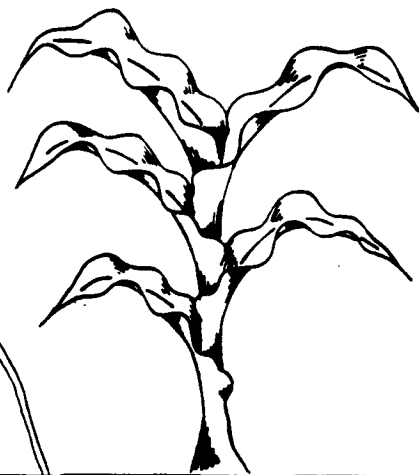
Americus,
Georgia

Annual Report

Americus Plant Materials Center

1992 - 1993

Americus, Georgia



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AMERICUS PLANT MATERIALS CENTER

AMERICUS, GEORGIA

Annual Report - 1992-1993

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AMERICUS PLANT MATERIALS CENTER

INTRODUCTION

The Americus PMC was established in 1936 to produce planting materials, mainly pine seedlings, for use by the CCC Camps and the former SCS demonstration projects. The center contains seven soil types, with Orangeburg predominating on its 327.39 acres. Approximately two-thirds of the land is open for cultivation. Muckalee Creek runs through the southwest corner, furnishing water for irrigation. The center was operated on contract by the University of Georgia Experiment Station's from 1954 to 1975. The Soil Conservation Service has operated the center since 1976.

The real property holdings at the facility consist of 327.39 acres of land with 15 buildings, an underground irrigation system that covers about 85 acres, a water supply system, and sewage disposal system.

MISSION

The mission of the SCS Plant Materials Centers Program is to assemble, test and release plant materials for conservation use; determine techniques for their successful use; provide for their commercial increase; and promote the use of plant materials needed to meet the objectives and priorities of the National Conservation Program.

SUMMARY OF WEATHER CONDITIONS Americus, Georgia - 1992

Temperature (°F)			Precipitation(Inches) 63 Yrs(1929-1992)			
<u>Month</u>	<u>1992 Max.</u>	<u>1992 Min.</u>	<u>Mo. Total</u>	<u>63 Year Average</u>	<u>63 Year High Mo.</u>	<u>63 Year Low Mo.</u>
January	67	22	6.15	4.42	11.19	.64
February	75	27	6.40	4.68	12.28	.75
March	82	28	5.90	5.33	12.11	.48
April	87	33	2.32	3.95	12.26	.00
May	92	44	.40	3.41	8.35	.14
June	95	58	4.20	4.29	11.43	.03
July	99	67	1.70	5.14	9.85	1.25
August	95	58	1.55	4.09	11.76	.99
September	94	54	5.60	3.35	11.54	.10
October	84	41	2.30	2.02	9.60	.00
November	80	29	9.70	2.97	10.63	.05
December	75	28	2.40	4.22	12.29	.42
<u>TOTAL</u>			<u>48.62</u>	<u>47.87</u>		

The coldest day of the year was January 17. Last day of frost April 2nd. The hottest day of the year, July 12. First day of frost November 8th. First killing frost, November 29th.

- 1993

Temperature (°F)			Precipitation(Inches) 64 Yrs(1929-1993)			
<u>Month</u>	<u>1993 Max.</u>	<u>1993 Min.</u>	<u>Mo. Total</u>	<u>64 Year Average</u>	<u>64 Year High Mo.</u>	<u>64 Year Low Mo.</u>
January	72	29	5.90	4.44	11.19	.64
February	68	19	3.40	4.66	12.28	.75
March	83	20	10.05	5.40	12.11	.48
April	84	34	.45	3.90	12.26	.00
May	89	45	4.05	3.42	8.35	.14
June	98	61	.45	4.23	11.43	.03
July	101	65	2.13	5.09	9.85	1.25
August	100	62	1.05	4.04	11.76	.99
September	96	47	3.15	3.35	11.54	.10
October	88	36	3.70	2.05	9.60	.00
November	82	28	3.00	2.97	10.63	.05
December	74	23	3.25	4.20	12.29	.42
<u>TOTAL</u>			<u>40.58</u>	<u>47.75</u>		

The coldest day of the year was February 19. Last day of frost April 22nd. The hottest day of the year, July 19. First day of frost November 1st. First killing frost, November 1st.

DESCRIPTION OF THE AREA

The Americus PMC serves Alabama, Georgia, South Carolina, North Carolina, Tennessee, and parts of north Florida . These states present a wide range of climatic and soil conditions.

Elevations range from sea level to over 6,000 feet. Low temperatures will vary from -20 F at the higher elevations to 10 F along the coast while summer high temperatures range from 70 F in the mountains to 110 F at lower elevations.

Frost free days vary from 260 days near the coast to 130 days at the higher elevations.

Annual rainfall over the area ranges from 45 to 80 inches.

The states served by the Center are represented by the eleven major land resource areas.

MAJOR LAND RESOURCE AREAS SERVED:

- 123 Nashville Basin
- 128 Southern Appalachian Ridges and Valleys
- 129 Sand Mountain
- 130 Blue Ridge
- 133A Southern Coastal Plain
- 134 Southern Mississippi Valley Silty Uplands
- 135 Alabama and Mississippi Blackland Prairies
- 136 Southern Piedmont
- 137 Carolina and Georgia Sandhills
- 152 Gulf Coast Flatwoods
- 153 Atlantic Coast Flatwoods

Soil Conditions vary widely -- deep droughty sand, heavy plastic clay subject to excessive intermittent wetness and drying, highly acid to alkaline extremes, and swamps and marshes - fresh and salt. Farming enterprises also vary widely. The area contains a number of heavily populated suburban areas surrounding centers of industry and commerce. The mountains, seashore, and other areas of natural beauty are being rapidly developed to meet the demand for recreation.

Such a diversity of climate, soil, and enterprises requires many different types and kinds of vegetation to provide for protecting the land when it is properly treated for soil and water conservation.

COOPERATIVE AGREEMENTS

The PMC works cooperatively with the University of Georgia and Auburn University, and Fort Valley State College on several mutually beneficial projects. The plant materials program also works with EPA, GA DNR, DOD, and other state and federal agencies.

The PMC works with the Georgia and Alabama Crop Improvement Associations in regards to foundation seed fields and seed processing facilities.

MAJOR LONG RANGE PROGRAM PRIORITIES

1. Legumes to be used in conservation tillage

Problem:

There is a need for annual cool-season legumes that are compatible with conservation tillage systems and which can be established to provide cover in late summer or early fall. Legumes as a cover crop can help prevent erosion, as well as provide nitrogen and mulch for summer crops.

2. Constructed wetlands and Water Quality

Problem:

Many farm operations contribute to surface and ground water pollution. A constructed wetland including aquatic plants can reduce certain pollutant levels. Plants and techniques are needed to refine the constructed wetlands.

3. Conversion of marginal cropland to less intensive use

Problem:

Marginal cropland is defined as land that should not be subjected to intense cultivation. Because of the steepness of slope, and soils that are shallow, stony, and highly erodible, it should not be used for growing crops. There is a need for plants that can be an alternative for converting marginal cropland to less intensive use. These uses could include the production of hay and grazing. Marginal cropland includes land classes 3e and 4e.

4. Plants for establishment of waterways, water disposal areas and similar critical areas on cropland

Problem:

Establishing permanent vegetative cover on waterways, water disposal areas, and similar areas quickly is often impossible because of poor soil and water relations, erosion, and low soil fertility. Plants being used are usually slow in providing adequate cover; thus, much damage from erosion occurs during the establishment period. Therefore, plants are needed that can quickly establish themselves and survive in this situation.

5. Plants to control gully erosion on cropland

Problem:

There are existing gullies that are actively eroding while new ones are forming. These occur on cropland and in forest areas. This active erosion is continually destroying valuable land and contributing to the pollution of streams and other bodies of water. Plants are needed that can live in a gully environment and provide erosion protection.

PM EVALUATION PROCEDURE

Conservation problems for the PMC service area are identified in the PMC Long Range Plan. Then priorities are established by the State Conservationists Advisory Committee. The PMC then develops project plans to solve the problems given the highest priority. These projects involve identifying different plants to solve specific problems in a priority. At this point, the evaluation sequence begins.

STEP I

Step (I) involves the assembly of identified plants and the beginning of the first evaluation process called "initial evaluation".

STEP II

Step (II) involves an initial or small scale increase of seed or plant materials.

STEP III

Step (III) is advanced evaluation.

STEP IV

Step (IV) is field evaluation planting.

STEP V

Step (V) is large scale seed or plant increase.

STEP VI

Step (VI) is field planting.

STEP VII

Step (VII) is cultivar release and use. At this stage a new cultivar has been released to the public for use in solving the problems that were identified in the beginning of the evaluation procedure.

STEP I

The first step (I) is to assemble the identified plants and begin initial evaluation of the assembly. The collection can be from local or foreign sources. When the plants arrive at the PMC they are assigned individual numbers. These identification numbers are used throughout the evaluation process. These individual plants are collected from several areas to include as many 'ecotypes' as possible. Once the collection is complete, the initial evaluation begins. The initial evaluation involves data collection on each plant accession (plant identified with a I.D. number). This data collection can include evaluation for vigor, growth, stand, foliage characteristics, reseeding ability, seed production, bloom data, resistance to disease and insects, tolerance to heat, drought and cold. Specific dates are also recorded to reflect flowering and maturity. Due to the nature of the collection and evaluation process, only small quantities of any accession are maintained at the PMC.

Big Bluestem - Andropogon gerardii

A native perennial warm-season grass. Initial evaluation began in the spring of 1990. This grass is being evaluated under "conversion of marginal cropland to less intensive use".

Collections of vegetative material of 750 different accessions were assembled from southeastern states in the winter of 1988 and 1989. These accessions were space planted in two replications during the spring of 1989 and 1990, giving us a total of approximately 15,000 individual plants to evaluate.

In 1992, Dr. Edzard van Santen (Auburn University) began a co-operative effort with the PMC to develop a new big bluestem cultivar.

Cattle preference was determined in 1993. A crossing block of selected material is scheduled for planting in 1994. This block should provide material for advanced studies in the future.

Switchgrass - Panicum virgatum

Switchgrass is a native perennial, warm season grass. This grass will be evaluated under 'conversion of marginal cropland to less intensive use'.

Collections of vegetative material of 1098 different accessions were assembled from the Southeastern United States. These accessions were space planted in two replications during the spring of 1991/92.

Preliminary data was collected in 1993.

Andropogon gerardi, big bluestem



Panicum virgatum, switchgrass



STEP II

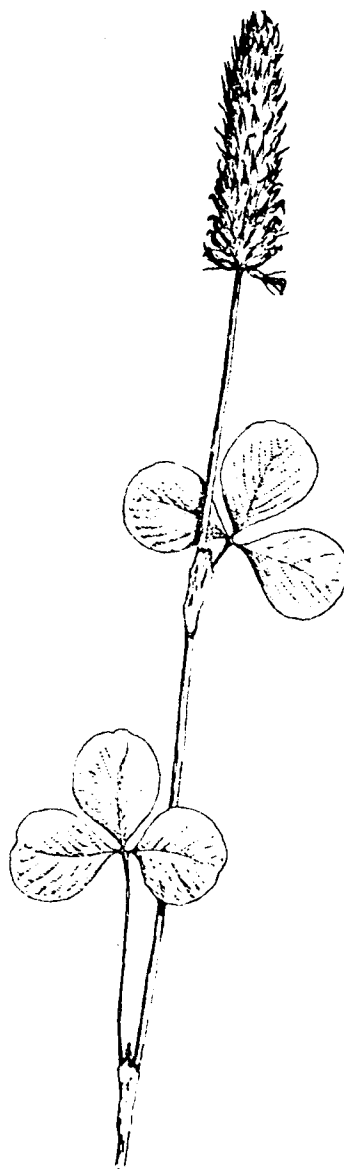
Step (II) involves an initial or small scale seed/plant increase. When an initial evaluation has been completed and accessions with superior traits have been identified, they are increased. This provides material for further testing and evaluating.

Crimson Clover - Trifolium incarnatum

Crimson clover is a cool season annual legume. This clover can be used as a green manure or cover crop for "conservation tillage".

The PMC is increasing some crimson clover for possible future testing.

Trifolium
incarnatum



Ogeechee Lime - Nyssa ogeche

Ogeechee lime is a native small tree that grows along certain drains and creeks of the Southeastern United States. It is being grown at the PMC for planting along large lakes and reservoirs.

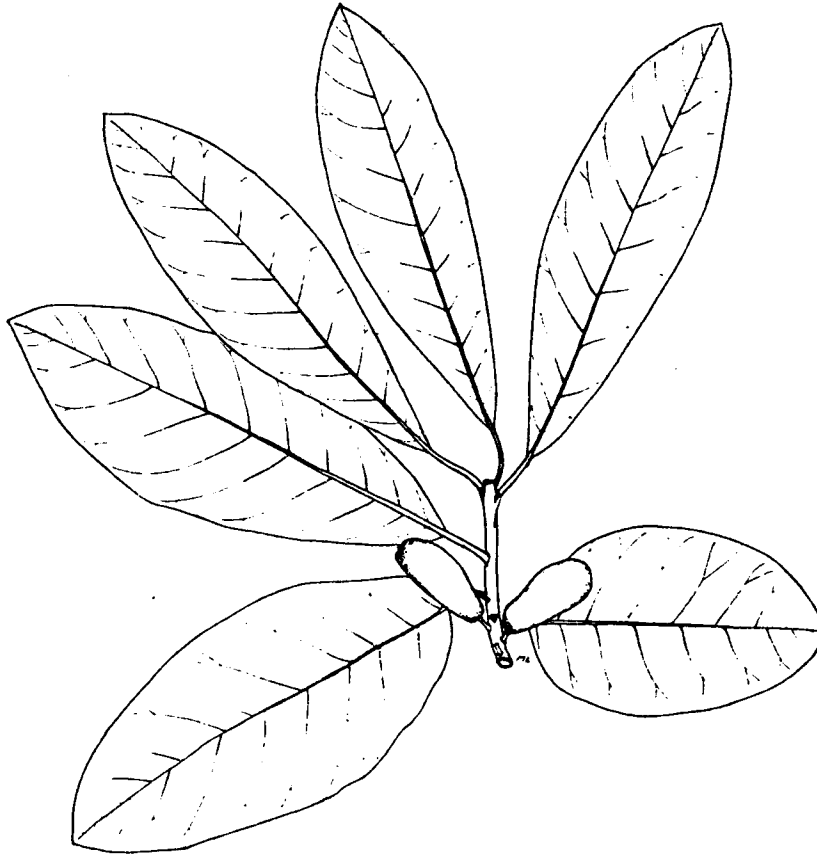


Fig. 202. *Nyssa ogeche*. (From Kurz and Godfrey, *Trees of Northern Florida*, 1962)

STEP III

Step (III) Advanced Evaluation: The superior plants from initial evaluation are then compared to known standard plants. They are evaluated in more detail than in initial evaluation. Usually in advanced evaluation, the plants are placed in replicated blocks and tested for forage production, ground covering ability, nitrogen fixing potential, etc. This data provides a basis for further selection of superior plants.

Caley Pea - Lathyrus hirsutus and Early Developing Hairy Vetch - Vicia villosa

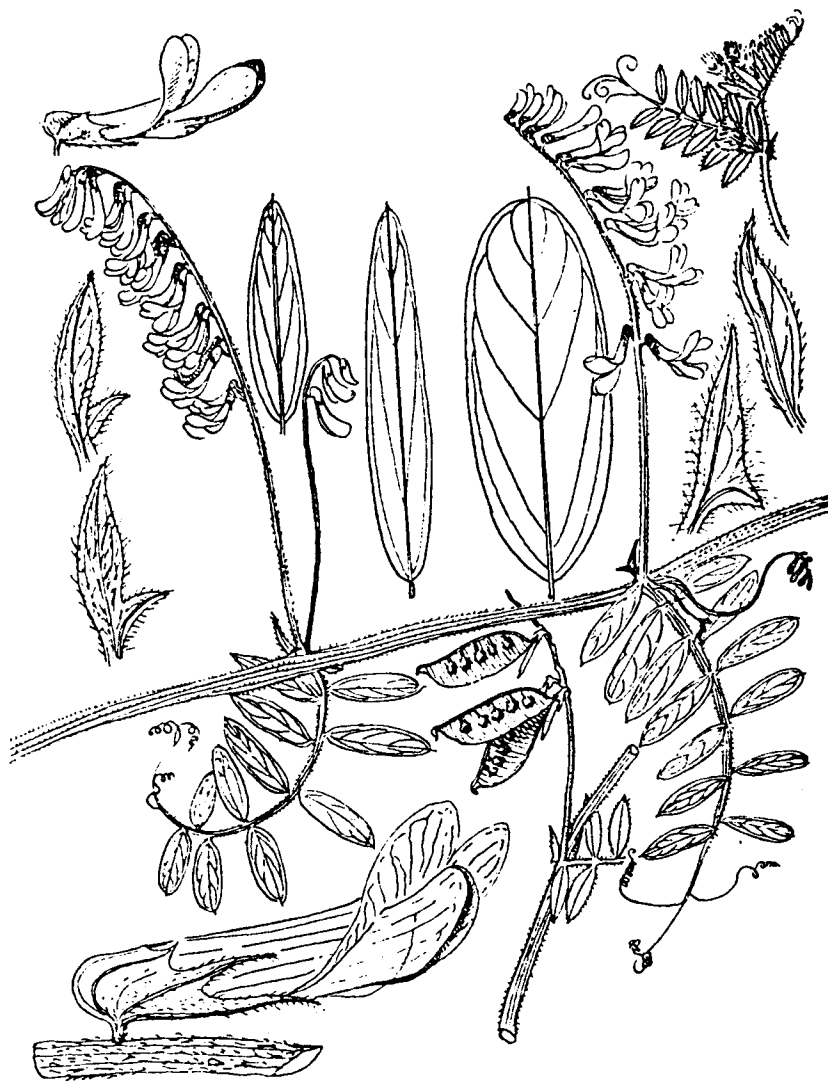
Dr. Jorge Mosjidis of Auburn University and Americus PMC have tested these two cool season annual legumes for several years. They were evaluated at five sites in Alabama and the Americus PMC. Both of these legumes are planned for cooperative release in 1994.

• Their primary use will be for conservation tillage.



Lathyrus hirsutus

. Caley Pea



Hairy vetch (*Vicia villosa*).

Indiangrass - Sorghastrum nutans - (Co-op Univ. of GA - Dr. Joe Bouton)

This is a tall native perennial warm-season grass that grows in openings and in open pine stands. It produces many brilliant yellow seedheads. Midwestern varieties have long been used for forage production.

The PMC has evaluated this grass as plants for "conversion of marginal cropland to less intensive use".

A project is underway to test new germplasm of indiangrass called PI-514673 against known standards.

Dr. Joe Bouton from the University of Georgia is helping us test this material in Athens, Georgia and Americus.

Additional tests are planned for 1994.



-*Sorghastrum nutans*.

Eastern Gammagrass - Tripsacum dactyloides

Eastern gammagrass is a native warm season perennial. It is a very nutritious pasture and hay plant. It's development will be used for "conversion of marginal cropland to less intensive use".

A five acre field of 'Pete' Eastern gammagrass has been established at the Americus PMC. We plan to use this field as a cultural management tool and as a demonstration area. In 1994 the PMC will establish rotational grazing on the gammagrass to evaluate cattle utilization.



Tripsacum
dactyloides

STEP IV

Step (IV) Field Evaluation Planting: Advanced evaluations often include off-center field evaluation plantings (FEP's) to test plants where soil and other conditions are different from those of the PMC.

Field Evaluation Plantings

This information will be presented in the plant materials specialist report including constructed wetland information.

STEP V

Step (V) Field or Large Scale Increase: Accessions that are candidates for release are grown in larger quantities for final stages of evaluation.

Virginia Wildrye - Elymus virginicus



This is a native cool-season perennial bunch grass. It grows mostly on moist soils in woodlands and along drainageways. It has the ability to grow in the partial shade of over-story trees.

It shows potential for use in water treatment systems to improve water quality.

Vetivera grass - *Vetiveria zizanioides*

Vetivera grass has been used in India and other countries as a perennial living terrace for several years.

The PMC has grown and potted 12,000 vetivera plants for use by the Department of Defense and other government agencies.



Vetiveria
zizanioides

STEP VI

Step (VI) Field Planting: The last step in evaluating a candidate for release by a PMC is the field planting. (Not to be confused with FEP). In field plantings the candidate plant is compared to standard plants in real field conditions.

This information will be presented in the plant materials specialist report.

STEP VII

Step (VII) Cultivar Release and Use: When a superior plant has gone through all the above steps, it goes through the release process. The plant is cooperatively named and released for commercial production and use. The PMC does not supply seed directly to the general public. We maintain a small "foundation" block to provide genetically pure stock to qualified growers who supply the public.

'Amclo' Arrowleaf Clover - Trifolium vesiculosum:

A vigorous, cool-season annual legume that produces good yields of forage and hay for livestock.

'Ambro' Virgata Lespedeza - Lespedeza virgata:

A fine-stemmed warm-season perennial legume. It was released for erosion control on roadbanks and other critical sites. It also shows potential for forage production.

'Pensacola' Bahiagrass - Paspalum notatum:

A warm-season perennial grass. It was released for erosion control and forage production.

'Dove' Proso Millet - Panicum miliaceum:

A robust warm-season annual grass. It produces an abundant crop of seeds. It was released for wildlife food.

'Ellagood' Autumn Olive - Elaeagnus umbellata:

A spreading, upright, non-legume, nitrogen-fixing deciduous shrub. It produces an abundant fruit crop which ripens 30-60 days later than other varieties now available commercially. It was released for wildlife use, windbreaks and barriers.

'Amquail' Thunberg Lespedeza - Lespedeza thunbergii:

A perennial, warm-season bush lespedeza. It produces seed and cover for wildlife, especially wild birds. It shows better deer browse resistance than other adapted commercially available varieties. It was released for wildlife food, cover and erosion control.

'Flageo' Marshhay Cordgrass - Spartina patens (SCS - Ft. Valley State)

Marshhay cordgrass is a strongly rhizomatous perennial grass that grows about three feet tall.

The principal conservation use of 'Flageo' will be to vegetate and restabilize tidal streambanks, salt marshes above high tide, and low elevation coastal sand dune areas. The known area of adaptation includes the South Atlantic and Gulf Coast from Virginia to Texas. It can also be used along fresh water lakes.

'Big O' Wild Crabapple - Malus coronaria

This large fruited crabapple was released for wildlife food and cover.

'GA-5' Tall Fescue - Festuca arundinacea (Univ. of GA/SCS)

GA-5 is a fescue adapted to the hot, dry summers of the southeastern coastal plain region. This fescue will give coastal plain farmers forage during the cool season.

'Doncorae' Brunswickgrass - Paspalum nicorae

Doncorae is a rhizomatous perennial grass. It is used primarily in grassed waterways and filter strips.

'Sumter Orange' Daylily - Hemerocallis fulva

This daylily is a vigorous, attractive daylily. It will be used primarily as a beautification plant.

'Wetlander' Giant Cutgrass - Zizaniopsis miliacea

Wetlander is a robust perennial grass well adapted to wetland conditions. It will be used in constructed wetlands.

'Restorer' Giant Bulrush - Scirpus californicus

Restorer is a large bulrush that can grow to 7-9 feet tall. It occurs naturally in wetland environments. It will be used in constructed wetlands.

'Americus' Hairy Vetch - Vicia villosa (Univ. of GA/SCS)

This is a late maturing hairy vetch. It produces large amounts of dry matter for cool season cover in conservation tillage systems.

SPECIAL COOPERATIVE EVALUATIONS:

When promising plants from other areas are recognized, this material is grown in a small adaptational block to determine possible future potential. The Americus PMC grew blocks of the following for that purpose:

<u>Name</u>	<u>Source</u>	<u>Purpose</u>
Herbaceous Mimosa (<u>Mimosa strigillosa</u>) 548994	Nacogdoches TX	Revegetation Stabilization
Unknown Legume	Americus GA	Identification
Wild Barley	Rabun Co., GA	Identification
Sweetgrass (<u>Muhlenbergia filipes</u>) 9057241, 9057242, 9057243, 9057244	SC	Basket Weaving
Okie Bean (<u>Dipogon lignosus</u>) 9057281	Albany, GA	Wildlife
Vetiver Grass (<u>Vetiveria zizanioides</u>) 302300, 196257, 213903, 271633 and 537061	India	Erosion Control, Living Terrace
<u>Alnus serrulata</u> PI-421620	Kentucky PMC	Establishment/ Restoration of Wetland Sites
Erect Willow (<u>Salix ligulifolia</u>) PI-508556	Oregon PMC	Overall adaptation local service area conservation use
Columbia River Willow (<u>Salix fluviatilis</u>) PI-508553	Oregon PMC	"
Hooker Willow (<u>Salix hookeriana</u>) PI-508554	Oregon PMC	"
Sitka Alder (<u>Alnus sinuata</u>) PI-9040484	Oregon PMC	Adaptation
Orchardgrass (<u>Dactylis glomerata</u>) (3 accessions)	Kentucky PMC	Adaptation
Tall Oatgrass (<u>Arrhenatherum elatius</u>) 9061649	Kentucky PMC	Adaptation

SEED AND VEGETATIVE STOCK PRODUCERS

<u>CROP</u>	<u>PRODUCER</u>
<u>Trifolium vesiculosum</u> 'Amclo' Arrowleaf Clover	Georgia Crop Improvement Association 2425 S Milledge Avenue Athens, Georgia 30605
<u>Lespedeza virgata</u> 'Ambro' Virgata Lespedeza	Georgia Crop Improvement Association 2425 S Milledge Avenue Athens, Georgia 30605
<u>Paspalum notatum</u> 'Pensacola' Bahiagrass	Georgia Crop Improvement Association 2425 S Milledge Avenue Athens, Georgia 30605
<u>Panicum miliaceum</u> 'Dove' Proso Millet	Georgia Crop Improvement Association 2425 S Milledge Avenue Athens, Georgia 30605
<u>Elaeagnus umbellata</u> 'Ellagood' Autumn Olive	McCorkle Nursery Rt 1 Dearing, Georgia 30808 (404)595-3050
<u>Hemerocallis fulva</u> 'Sumter Orange' Daylily	Hamilton Nursery Othello Hamilton Hamilton Drive P O Box 871 Thomson, Georgia 30824
<u>Scirpus californicus</u> 'Restorer' Giant Bulrush	Hamilton Nursery c/o Othello Hamilton Hamilton Dr P O Box 871 Thomson, Georgia 30824
<u>Scirpus californicus</u> 'Restorer' Giant Bulrush	Varn Companies P O Box 4488 Jacksonville, Florida 32201-4488
<u>Scirpus californicus</u> 'Restorer' Giant Bulrush	Flowerwood Nursery, Inc. 6470 Dauphin Island Parkway Mobile, Alabama 36605
<u>Zizaniopsis miliacea</u> 'Wetlander' Giant Cutgrass	Varn Companies P O Box 4488 Jacksonville, Florida 32201-4488
<u>Zizaniopsis miliacea</u> 'Wetlander' Giant Cutgrass	Flowerwood Nursery, Inc. 6470 Dauphin Island Parkway Mobile, Alabama 36605

SEED AND VEGETATIVE STOCK PRODUCERS

CROP

Spartina patens 'Flageo'
Marshhay Cordgrass

Lespedeza thunbergii
Amquail Thunberg Lespedeza

PRODUCER

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School of Agriculture
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William Smith
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Wigham, GA 31719

Julian Brown
126 Court St, PO Box 8
Monrow, GA 30655 (404)267-8363

Alabama Crop Improvement Assoc., Inc.
South Donahue Drive
Auburn University, AL 36849
(205)821-7400

Adams-Briscoe Seed Company
PO Box 18
Jackson, GA 30733 (404)775-7826

Lambert Seed and Supply, Inc.
Hwy 28 W., PO Box 128
Camden, AL 36726 (205)682-4111

Morgan Dunn
Rt 5, Box 105
Troy, AL (205)375-6695

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